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09/852,235	05/10/2001	Takayuki Taniguchi	208371US2S	4207

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EXAMINER	
LAO, TIM P	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/852,235	Applicant(s) TANIGUCHI ET AL.	
	Examiner Tim Lao	Art Unit 2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *28-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *28-53* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.

2. Noted that Applicants argued that Mauro does not alter the noise suppression characteristics of its system if speech is determined to be present in the input signal and that Mauro is updated when speech is determined not to be present. The examiner respectfully points out that Mauro teaches a noise suppressor 108 that suppresses background noise contained within an audio or speech signal (see col.4, lines 21-43). Therefore, the objective of the noise suppressor 108 meets the limitations "a noise suppressor suppressing background noise contained in a speech signal" in claims 1 and 19. Applicants also argued that the speech coding algorithm of Mauro is not disclosed or suggested as being interrelated with the noise suppression algorithm. The examiner respectfully points out that rate information is feed back to the noise suppressor 108 by the variable rate vocoder (see col.6, lines 49-59)

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 28-41 and 43-44 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 28 and 44, as best understood from the original disclosure, noise suppression algorithm X, Y, and Z is selected in accordance with coding algorithm A, B, and C. Hence, the switching ability of the suppression and coding algorithms is stated (see Fig.1; p.20, ll.7-27). However, the limitation in the claims "wherein the noise suppressor selects a noise suppression algorithm being preset corresponding to the used speech coding algorithm" implies that the suppression and coding algorithms is at a fixed or set state and thus not switchable. Therefore, the feature "wherein the noise suppressor selects a noise suppression algorithm being preset corresponding to the used speech coding algorithm" does not find support in the original disclosure. If the applicant is content that such limitation is disclosed in the original disclosure, the examiner requests that the applicant provides specific references in the disclosure to support the added limitation "wherein the noise suppressor selects a noise suppression algorithm being preset corresponding to the used speech coding algorithm".

Regarding claim 29, as best understood from the original disclosure, noise suppression algorithm X, Y, and Z is selected in accordance with coding rate sections A, B, and C. Hence, the switching ability of the suppression and coding rate sections is stated (see Fig.5; p.20, ll.7-27). However, the limitation in the claim "wherein the noise

suppressor selects a noise suppression algorithm being preset corresponding to the used speech coding rate" implies that the suppression and coding algorithms is at a fixed or set state and thus not switchable. Therefore, the feature "wherein the noise suppressor selects a noise suppression algorithm being preset corresponding to the used speech coding rate" does not find support in the original disclosure. If the applicant is content that such limitation is disclosed in the original disclosure, the examiner requests that the applicant provides specific references in the disclosure to support the added limitation "wherein the noise suppressor selects a noise suppression algorithm being preset corresponding to the used speech coding rate".

Regarding claims 35 and 36, similar arguments as set forth in claim 28 and 29 can be applied to claims 35 and 36 for the suppression and coding algorithms on the decoding side.

Regarding claim 43, as best understood from the original disclosure, noise suppression algorithm X, Y, and Z is selected in accordance with the hands-free or non-hands-free functions. Hence, the switching ability of the suppression and hands-free/non-hands-free function is stated (see Fig.21; p.76, ll.17-27; p.77, ll.1-4). However, the limitation in the claim "which is preset corresponding to one of the hands-free function and non-hands-free function" implies that the suppression algorithm and hands-free/non-hands-free function is at a fixed or set state and thus not switchable. Therefore, the feature "which is preset corresponding to one of the hands-free function and non-hands-free function" does not find support in the original disclosure. If the applicant is content that such limitation is disclosed in the original disclosure, the

examiner requests that the applicant provides specific references in the disclosure to support the added limitation "which is preset corresponding to one of the hands-free function and non-hands-free function".

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 42 and 45-53 are rejected under 35 U.S.C. 102(e) as being anticipated by Mauro (U.S. Patent 6,122,384, hereinafter "Mauro").

Claim(s)	Mauro discloses:
42	A signal processor for use in device in which a hands-free function is selectively useable (col.4, ll.13-15), the apparatus comprising: *{The microphone 102 is hands-free/non-hands-free.}* a noise suppressor, which has a first noise suppression algorithm corresponding to the hands-free function and a second noise suppression algorithm corresponding to a non-hands-free function, configured to suppressed background noise contained in a speech signal. (col.3, ll.16-38; col.4, ll.13-15; col.1, ll.43-47) *{Since the microphone is hands-free/non-hands-free (col.4, ll.13-15), the gain adjustment algorithm is used to improve according to whether the function is hands-free or non-hands-free. (col.3, ll.16-38)}*

	a switch configured to select (e.g., user-selectable, col.3, ll.30-32) the first or second noise suppression algorithm in accordance with the used function.
Claim(s) 45	Mauro discloses: A mobile radio communication terminal having a signal processor (col.4, ll.7-12), the signal processor comprising: a noise suppressor (Fig.1, 108), which has a plurality of different noise suppression algorithms (e.g., spectral gain adjustment algorithm for hands-free and non-hands-free function: col.3, ll.16-37, col.4, ll.13-15, col.1, ll.43-47), configured to suppress background noise contained in a speech signal (col.4, ll.32-36); and a speech encoder (i.e. variable rate vocoder), which has a plurality of different speech coding rates (e.g., variable rate) each corresponding to one of the different noise suppression algorithms, configured to encode the suppressed speech signal by using one of the different coding rates (col.5, ll.58-65; col.6, ll.2-13), *{The variable rate vocoder uses one of the four rates, 16, 40, 80, or 171 information bits in 20ms data frames (0.8Kbps, 2Kbps, 4Kbps, or 8.5Kbps) to encode the data.}* wherein the noise suppressor selects a noise suppression algorithm corresponding to the used coding algorithm at the speech encoder. *{Rate determination provides information on the presence and absence of speech (col.6, ll.14-23). This rate determination information is provided to the noise suppressor 108 by the variable rate vocoder (col.6, ll.57-59). The presence and absence of speech (signal and noise energy) is used to determine SNR (col.2, ll.55-60) and thus the channel gains and channel gain adjustment (col.1, ll.26-36; col.2, ll.26-34). The use of spectral subtraction technique in noise suppression to determine, in a frequency band, the signal-to-noise ratio (SNR), the channel gains, and channel gain adjustment is indicative of the presence of different noise suppression characteristics of the noise suppressor. Therefore, it is seen that the determining or selecting of noise suppression characteristic is based on the used coding algorithm (rate information).}*
Claim(s) 46	Mauro discloses:

	A signal processing apparatus comprising: a noise suppressor (Fig.1, 108) having a plurality of different noise suppression characteristics (e.g., noise suppression for hands-free and non-hands-free function: col.3, ll.16-37, col.4, ll.13-15, col.1, ll.43-47), suppressing background noise contained in a speech signal (col.4, ll.32-36), where the number of the noise suppression characteristics is a positive integer Q (e.g., Q=2 for hands-free and non-hands-free); and *{Hands-free and non-hands-free environment have different background noise characteristics. The SNR for hands-free environment is poorer. (col.1, ll.41-49) }* a speech encoder (i.e. variable rate vocoder) having a plurality of different speech coding algorithms (e.g., rate decision algorithm, col.6, 23-24), encoding the suppressed speech signal by using one of the different speech coding algorithms, where the number of the coding speech coding algorithms is a positive integer P (e.g., P=4 for 16, 40, 80, or 171 information bits in 20ms data frames), (col.5, ll.58-65; col.6, ll.2-13) wherein the noise suppressor selects a noise suppression characteristic in accordance with the used speech coding algorithm at the speech encoder (col.6, ll.56-59), and the following relationship is established: $P \geq Q > 1$. *{(P=4) ≥ (Q=2) > 1 is satisfied.}*
Claim(s) 47	<u>Mauro discloses:</u> A signal processing apparatus comprising: a noise suppressor (Fig.1, 108) having a plurality of different noise suppression characteristics (e.g., noise suppression for hands-free and non-hands-free function: col.3, ll.16-37, col.4, L.13-15, col.1, L.43-47), suppressing background noise contained in a speech signal (col.4, ll.32-36), where the number of the noise suppression characteristics is a positive integer Q (e.g., Q=2 for hands-free and non-hands-free); and *{Hands-free and non-hands-free environment have different background noise characteristics. The SNR for hands-free environment is poorer. (col.1, ll.41-49) }*

	a speech encoder (i.e. variable rate vocoder) having a plurality of different speech coding rates (e.g., 0.8Kbps, 2Kbps, 4Kbps, or 8.5Kbps: col.6, ll.2-23), encoding the suppressed speech signal by using one of the different speech coding rates, where the number of the speech coding rates is a positive integer R (e.g., R=4 for the four different coding rates), *{The variable rate vocoder uses one of the four rates, 16, 40, 80, or 171 information bits in 20ms data frames (0.8Kbps, 2Kbps, 4Kbps, or 8.5Kbps) to encode the data.}* wherein the noise suppressor selects a noise suppression characteristic in accordance with the used speech coding rate at the speech encoder (col.6, ll.56-59), and the following relationship is established: $R \geq Q > 1$. *{(R=4) ≥ (Q=2) > 1 is satisfied.}*
Claim(s) 48	<u>Mauro discloses:</u> A signal processing apparatus comprising: a noise suppressor (Fig.1, 108) having a plurality of different noise suppression characteristics (e.g., noise suppression for hands-free and non-hands-free function: col.3, ll.16-37, col.4, ll.13-15, col.1, ll.43-47), suppressing background noise contained in a speech signal (col.4, ll.32-36), the noise suppression characteristics being varied in accordance with a parameter (gain, SNR) set by a parameter setting means (e.g., spectral gain adjustment); and a speech encoder (i.e. variable rate vocoder) having a plurality of different speech coding algorithms (e.g., rate decision algorithm, col.6, 23-24), encoding the suppressed speech signal by using one of the different speech coding algorithms, where the number of the speech coding algorithms is a positive integer P (e.g., P=4 for 16, 40, 80, or 171 information bits in 20ms data frames), (col.5, ll.58-65; col.6, ll.2-13) wherein the parameter setting means sets a suitable parameter so as to select a noise suppression characteristic in accordance with the used speech coding algorithm at the speech encoder (col.6, ll.56-59), where the number of the parameter is a positive integer S

	(e.g., S=2 for gain and SNR), and the following relationship is established: $P \geq S > 1$. *{(P=4) ≥ (S=2) > 1 is satisfied.}*
Claim(s) 49	Mauro discloses: A signal processing apparatus comprising: a noise suppressor (Fig.1, 108) having a plurality of different noise suppression characteristics (e.g., noise suppression for hands-free and non-hands-free function: col.3, ll.16-37, col.4, ll.13-15, col.1, ll.43-47), suppressing background noise contained in a speech signal (col.4, ll.32-36), the noise suppression characteristics being varied in accordance with a parameter (gain, SNR) set by a parameter setting means (e.g., spectral gain adjustment); and a speech encoder (i.e. variable rate vocoder) having a plurality of different speech coding rates (e.g., 0.8Kbps, 2Kbps, 4Kbps, or 8.5Kbps: col.6, ll.2-23), encoding the suppressed speech signal by using one of the different speech coding rates, where the number of the speech coding rates is a positive integer R (e.g., R=4 for the four different coding rates), *{The variable rate vocoder uses one of the four rates, 16, 40, 80, or 171 information bits in 20ms data frames (0.8Kbps, 2Kbps, 4Kbps, or 8.5Kbps) to encode the data.}* wherein the parameter setting means sets a suitable parameter so as to select a noise suppression characteristic in accordance with the used speech coding rate at the speech encoder (col.6, ll.56-59), where the number of the parameter is a positive integer S (e.g., S=2 for gain and SNR), and the following relationship is established: $R \geq S > 1$. *{(R=4) ≥ (S=2) > 1 is satisfied.}*
Claim(s) 50	Mauro discloses: A signal processing apparatus comprising:

	a noise suppressor (Fig.1, 108) having a plurality of different noise suppression algorithms (e.g., spectral gain adjustment algorithm for hands-free and non-hands-free function: col.3, ll.16-37, col.4, ll.13-15, col.1, ll.43-47), suppressing background noise contained in a speech signal (col.4, ll.32-36), where the number of the noise suppression characteristics is a positive integer Q (e.g., Q=2 for hands-free and non-hands-free); and *{Hands-free and non-hands-free environment have different background noise characteristics. The SNR for hands-free environment is poorer. (col.1, ll.41-49)}* a speech encoder (i.e. variable rate vocoder) having a plurality of different speech coding algorithms (e.g., rate decision algorithm, col.6, 23-24), encoding the suppressed speech signal by using one of the different speech coding algorithms, where the number of the speech coding algorithms is a positive integer P (e.g., P=4 for 16, 40, 80, or 171 information bits in 20ms data frames), (col.5, ll.58-65; col.6, ll.2-13) wherein the noise suppressor selects a noise suppression algorithm in accordance with the used speech coding algorithm at the speech encoder (col.6, ll.56-59), and the following relationship is established: $P \geq Q > 1$. *{(P=4) ≥ (Q=2) > 1 is satisfied.}*
Claim(s) 51	<u>Mauro discloses:</u> A signal processing apparatus comprising: a noise suppressor (Fig.1, 108) having a plurality of different noise suppression algorithms (e.g., spectral gain adjustment algorithm for hands-free and non-hands-free function: col.3, ll.16-37, col.4, ll.13-15, col.1, ll.43-47), suppressing background noise contained in a speech signal (col.4, ll.32-36), where the number of the noise suppression characteristics is a positive integer Q (e.g., Q=2 for hands-free and non-hands-free); and *{Hands-free and non-hands-free environment have different background noise characteristics. The SNR for hands-free environment is poorer. (col.1, ll.41-49)}* a speech encoder (i.e. variable rate vocoder) having a plurality of different speech

	coding rates (e.g., 0.8Kbps, 2Kbps, 4Kbps, or 8.5Kbps: col.6, ll.2-23), encoding the suppressed speech signal by using one of the different speech coding rates, where the number of the speech coding rates is a positive integer R (e.g., R=4 for the four different coding rates), *{The variable rate vocoder uses one of the four rates, 16, 40, 80, or 171 information bits in 20ms data frames (0.8Kbps, 2Kbps, 4Kbps, or 8.5Kbps) to encode the data.}* wherein the noise suppressor selects a noise suppression algorithm in accordance with the used speech coding rate at the speech encoder (col.6, ll.56-59), and the following relationship is established: $R \geq Q > 1$. *{(R=4) ≥ (Q=2) > 1 is satisfied.}*
Claim(s) 52	<u>Mauro discloses:</u> A signal processing apparatus comprising: a noise suppressor (Fig.1, 108) having a plurality of different noise suppression algorithms (e.g., spectral gain adjustment algorithm for hands-free and non-hands-free function: col.3, ll.16-37, col.4, ll.13-15, col.1, ll.43-47), suppressing background noise contained in a speech signal (col.4, ll.32-36), the noise suppression characteristics being varied in accordance with a parameter (gain, SNR) set by a parameter setting means (e.g., spectral gain adjustment); and a speech encoder (i.e. variable rate vocoder) having a plurality of different speech coding algorithms (e.g., rate decision algorithm, col.6, 23-24), encoding the suppressed speech signal by using one of the different speech coding algorithms, where the number of the speech coding algorithms is a positive integer P (e.g., P=4 for 16, 40, 80, or 171 information bits in 20ms data frames), (col.5, ll.58-65; col.6, ll.2-13) wherein the parameter setting means sets a suitable parameter so as to select a noise suppression characteristic in accordance with the used speech coding algorithm at the speech encoder (col.6, ll.56-59), where the number of the parameter is a positive integer S (e.g., S=2 for gain and SNR), and the following relationship is established:

	$P \geq S > 1$. *{(P=4) ≥ (S=2) > 1 is satisfied.}*
Claim(s) 53	Mauro discloses: A signal processing apparatus comprising: a noise suppressor (Fig.1, 108) having a plurality of different noise suppression algorithms (e.g., spectral gain adjustment algorithm for hands-free and non-hands-free function: col.3, ll.16-37, col.4, ll.13-15, col.1, ll.43-47) , suppressing background noise contained in a speech signal (col.4, ll.32-36), the noise suppression characteristics being varied in accordance with a parameter (gain, SNR) set by a parameter setting means (e.g., spectral gain adjustment); and a speech encoder (i.e. variable rate vocoder) having a plurality of different speech coding rates (e.g., 0.8Kbps, 2Kbps, 4Kbps, or 8.5Kbps: col.6, ll.2-23), encoding the suppressed speech signal by using one of the different speech coding rates, where the number of the speech coding rates is a positive integer R (e.g., R=4 for the four different coding rates), *{The variable rate vocoder uses one of the four rates, 16, 40, 80, or 171 information bits in 20ms data frames (0.8Kbps, 2Kbps, 4Kbps, or 8.5Kbps) to encode the data.}* wherein the parameter setting means sets a suitable parameter so as to select a noise suppression characteristic in accordance with the used speech coding rate at the speech encoder (col.6, ll.56-59), where the number of the parameter is a positive integer S (e.g., S=2 for gain and SNR), and the following relationship is established: $R \geq S > 1$. *{(R=4) ≥ (S=2) > 1 is satisfied.}*

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tim Lao whose telephone number is 703-305-8955. The examiner can normally be reached on M-F, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on 703-305-4827. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tim Lao
Examiner
Art Unit 2655

TL
05/25/04

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